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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,571	07/18/2006	Andrey Akaro		6475
7590	09/26/2008	Zborovsky I. 6 Schoolhouse Way Dix Hills, NY 11746	EXAMINER	
		ELLIS, RYAN H		
		ART UNIT		PAPER NUMBER
		4137		
		MAIL DATE		DELIVERY MODE
		09/26/2008		PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/586,571	AKARO ET AL.	
	Examiner	Art Unit	
	RYAN ELLIS	4137	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 4-6 is/are pending in the application.
 - 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) 4-6 is/are rejected.
- 7) Claim(s) ____ is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on ____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ . |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/18/2006</u> . | 6) <input type="checkbox"/> Other: ____ . |

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because: the signatures of all the inventors are missing. Signature of all inventors is required for correction.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear with the language used how the blades are oriented in relation to rotation of the hubs. Claim 5 will be interpreted as best understood.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,379,113 B1 to Kim in view of PCT Publication No. WO03/040555 to Seki,

U.S. Patent No. 6,168,384 to Vanmoor and UK Patent Application Publication No. 2,230,565 A to Helmy.

6. As to claim 4, Kim discloses a device (A), comprising a shaft (drive shaft of engine 21); at least two hubs arranged on said shaft and blades fixed on each of said hubs uniformly over a circumference (propellers 3). Kim fails to teach blades having sharp front and rear edges that have a thickness of $(0.10-0.25)b$, where b is chord length, and that are twisted relative to an axis extending through the middle of the blade.

7. Seki '555 (refer to U.S. Patent No. 6,974,309 B2 for English translation) teaches a blade with a thickness between 20 to 25 percent of the chord length (col. 10, ll. 47-51) where the maximum thickness occurs in the middle of the blade chord (col. 5, ll. 60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the device of Kim with the blade thickness, taught by Seki, for the purpose of increased efficiency, especially since it has been held that "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

8. Vanmoor '384 teaches a blade twisted (Fig. 2) relative to an axis extending through the middle of said local chords. Vanmoor (384) also teaches that sharp edges (col. 6, ll. 11-14) on blades increases efficiency. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the device

of Kim with the blade twist and sharp edges, taught by Vanmoor, for the purpose of increased efficiency.

9. Regarding claim 5, Kim does not teach blades fixed on said hubs inclinedly in a direction opposite to a direction of rotation. Seki teaches changing the blade angle (Fig. 5 and ¶ 0047) to both positive and negative values with the negative values making the blade rotated opposite to the direction of rotation. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the device of Kim with the blade inclination, taught by Vanmoor, for the purpose of increased efficiency.

10. Regarding claim 6, Kim teaches a cylindrical casing (barrel "a") that increases the efficiency of the propeller (col. 3, ll. 38-45). The reference fails to explicitly teach extending the casing in front of the hubs by the length of a propeller. Helmy teaches a cylindrical casing that extends past the front hub by the length of a blade (Fig. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the device of Kim with a casing extended by the length of a blade, taught by Helmy, for the purpose of increased efficiency, especially since it has been held that "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."

In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

11. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over PCT Publication No. WO03/040555 to Seki in view of U.S. Patent No. 6,749,401 B2 to Vanmoor.

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12. As to claim 4, Seki '555 (referring to U.S. Patent No. 6,974,309 B2 for English translation) teaches a propeller (turbine 1), comprising a shaft (2); at least two hubs (struts 4) arranged on said shaft; blades (3) fixed on each of said hubs uniformly over a circumference (Fig. 1), each of said blades (3) with a maximum thickness of profiles (0.10-0.25)b wherein b is a length of a local chord of said blade (col. 10, ll. 47-51), and being twisted relative to an axis extending through a middle of said local chords along said extension of said blade (mean line 9, col. 3, ll. 61-66), wherein said maximum thickness of said profile is located in the middle of each of said local chords (col. 5, ll. 60). Seki fails to teach a blade with a sharp front edge.

13. Vanmoor '401 teaches sharp edges (3, 4) on blades to increase efficiency and reduce aerodynamic drag on the blades (col. 1, ll. 30-45 and col. 2, ll. 22-27). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the blades of Seki with a sharp front edge, as taught by Vanmoor, for the purpose of increased efficiency.

14. As to claim 5, a propeller as defined in claim 4, Seki teaches blades are fixed on each of said hubs inclinedly in a direction opposite to a direction of rotation (Fig. 6 and ¶ 0047).

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to RYAN ELLIS whose telephone number is (571)270-7414. The examiner can normally be reached on Monday-Friday; 7:30-5:00.

16. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DMITRY SUHOL can be reached on (571)272-4430. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

17. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dmitry Suhol/
Supervisory Patent Examiner, Art
Unit 4137

RHE